

# Mingqian Liao

Southern University of Science and Technology, China

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## Education

### Southern University of Science and Technology

Turing Class, Senior Undergraduate

- Major / GPA: Computer Science; 3.74/4 (90.42)
- Supervisor: Dr. Jiang Liu & Dr. Shiqi Yu
- 2023 SUSTech Outstanding Student Scholarships **First Prize**
- 2022 ASC Student Supercompute Challenge **First Prize**
- 2022 APAC HPC-AI Competition - **Second Place**

Shenzhen, China

Sept 2020 - Current

### University of California, Berkeley

Visiting Student

- Main Subject: Deep Learning and Computer Vision
- Courses:** Machine Learning(CS189), Deep Learning(CS182), Graduate Computer Vision(CS280), Operating System(CS162)

Berkeley, USA

Jan 2023 - June 2023

### Johns Hopkins University

Undergraduate Scholar

- Supervisor: Dr. Vishal M. Patel
- Research Focus: 3D Reconstruction and Multi-Modal NeRF

Baltimore, USA

Aug 2023 - Febr 2024

## Research Experience

### Johns Hopkins University

Undergraduate Scholar

- Establish the first strictly aligned multi-view thermal and visible dataset
- Introduce Thermal-NeRF for novel view synthesis of low-light scenes using thermal and visible images
- Demonstrate that both sensors show benefits to each other in low-light scene reconstruction and provide related applications

Baltimore, United States

Aug 2023 - Feb 2024

### Southern University of Science and Technology

Research Student

- Build a virtual surgical instrument and fundus database
- Conduct a series of experiments and optimizations to migrate the model in the self-driving depth prediction scene into the surgical scene
- Design a model to generate the corresponding depth video from the input fundus surgery video

Shenzhen, China

Jul 2021 - Current

## Publications

- 2023/11** Jiacong Xu, **Mingqian Liao**, Ram Prabhakar Kathirvel, Vishal Patel (2023, November). *Thermal-NeRF: Leveraging Thermal Modality to Enhance Reconstruction in Low-Light and Nighttime Conditions*. Under Review.
- 2023/09** Jiang Liu, Xiaoqing Zhang, Yan Hu, et al., and **Mingqian Liao**. *Introduction to Artificial Intelligence*. Chemical Industry Press, Beijing.

## Honors & Awards

2023	<b>First prize</b> , SUSTech Outstanding Student Scholarship	SUSTech
2023	<b>Meritorious Winner</b> , Mathematical Contest in Modeling	COMAP
2023	<b>Distinguished Student Assistant</b> , Student Assistant in Computer Network	SUSTech
2022	<b>"Intelligent Pedestal" Industry-Education Integration Collaborative Education Project Scholarship</b> , Excel in Machine Learning course	Shenzhen
2022	<b>First Prize</b> , ASC Student Supercompute Challenge	Asia Supercomputer Community
2022	<b>Second Place</b> , 2022 APAC HPC-AI Competition	Singapore
2022	<b>Special Prize</b> , The 9th "League Cup" Undergraduate English Writing Contest	Guangdong Province
2022	<b>Second prize</b> , SUSTech Outstanding Student Scholarship	SUSTech
2021	<b>Third prize</b> , SUSTech Outstanding Student Scholarship	SUSTech
2020	<b>Special Prize</b> , Freshman Scholarship, ranked 2/1097 among all the freshmen	SUSTech

## Competitions and Projects

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### Digging Deeper into the Value of Wordle through Time Series Analysis and Natural Language Processing

China

Mathematical Contest in Modeling 2023

Feb 2023

- Build time series models to explain changes in the number of active Wordle players and predict future trends
- Establish a probabilistic regression model of the distribution of guessing times to analyze the difficulty of Wordle games
- Use clustering algorithms to grade the difficulty of the game, and combine natural language processing techniques to build a classification model from the puzzle to infer the difficulty rating of the game

### Deep-Learning-Based DNA Fast Decoding

Singapore

HPC-AI Advisory Council, National Supercomputing Centre (NSCC) Singapore, and National Computational Infrastructure (NCI) Australia

Jan 2022 - Nov 2022

- Design a model to predict transcription factor's binding site based on the input DNA sequence and DNase-sequence
- Improve the model using the key part of UNet and Leopard and use horovod to train the network distributedly

### Neural Network for Self-driving Data Augmentation

Shenzhen, China

Southern University of Science and Technology

Nov 2022 - Jan 2022

- Augment the automated driving dataset using the Stable Diffusion model as well as the Textual Inversion model
- Conduct experiments on the prompt to guide the direction of augmentation, and on the sampling method to augment

### Intelligent Identification of Ancient Glass Objects Given Statistical Machine Semester under Small Sample Size

China

CUMCM 2022

Sep 2022

- Build a cardinality test and decision tree to explore the relationship between the weather ability of ancient glass objects and their properties
- Establish a probabilistic regression model of the distribution of guessing times to analyze the difficulty of Wordle games
- Identify significant changes in composition of Lead-Barium glass and high potassium glass before and after weathering using KS Test
- Construct regression models using semi-supervised learning to infer the chemical composition of a given glass artifact before weathering

## Teaching Experience

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### Southern University of Science and Technology

Shenzhen, China

Teaching Assistant in CS305 Computer Network course

Sep 2022 - Feb 2023

### Southern University of Science and Technology

Shenzhen, China

**Distinguished** Teaching Assistant in CS205 C/C++ Program Design course

Feb 2022 - Feb 2023

## Extracurricular Experience

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### Shuren College Media Studio of SUSTech

Shenzhen, China

Secretary

Sep 2020 - Sep 2022

- Organize events and produce promotions

### Volunteer Federation of SUSTech

Shenzhen, China

Office Member

Sep 2020 - Sep 2021

- liaise with other departments and organize volunteer activities

## Language Ability

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**English** TOEFL score 107 (Reading 28, Listening 29, Writing 27, Speaking 23)

## Skills

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**Programming** Python(Numpy, Pytorch), Linux, C/C++, Java, SQL, Vue2, Git, Matlab

**Soft Skills** Teamwork, Time Management, Documentation, Presentation